

WATHEN (Wm H.)

Treatment of ectopic pregnancy xxx







* TREATMENT OF ECTOPIC PREGNANCY,

WITH REPORT OF A CASE

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WE can not adopt the best treatment in ectopic pregnancy unless we know its pathology as taught by the most correct observers; a failure in this particular has resulted in a variety of methods of treatment, and this applies as well to men of recognized ability in obstetrics and gynæcology. There is, however, nearly a unity of opinion with physicians who recognize that all cases are probably tubal in their origin; they oppose the use of electricity, or any other means to cause infanticide, except laparotomy, for the removal of the foetus and the membranes. Thomas, than whom there is no better authority in gynæcology, teaches the old classification of Parry and Dezeimeris. He speaks of an impregnated ovum "attaching itself primarily to the peritonæum," and of a "foetus and placenta entering the peritoneal cavity by rupture and developing there." No ovum has ever attached itself primarily to the peritonæum, nor is it possible for it to do so; nor has a placenta become separated from its attachments to the tube and then attached itself to any other structure. An ovum can not become fixed to any structure until it is held firmly and immovably, and a placenta once separated is always separated, just as in intra-uterine pregnancy. The placenta may finally attach itself to nearly any abdominal viscera by making epiphytic inroads upon other structures, and it may gradually become partially or possibly entirely detached from its tubal connection. It is seldom, if ever, attached by villous penetration to the abdominal surface of the peritonæum, but grows to the tissues or viscera under the peritoneal covering by gradually stripping it from its abdominal or visceral connection. The gestation sac may adhere to any part of the abdominal surface of the peritonæum and become fixed to the viscera or abdominal walls, but this attachment is of the same character we find in pelvic and abdominal tumors, and not by the growth of chorionic or placental villi.

The old classifications were mainly based upon post-mortem observations made by men not trained in pathological and microscopical research, who could not accurately distinguish the tissues often matted together and entirely changed in physical appearance.

Thomas' report of a four-pound placenta being attached to the entire extent of the colon from caput to sigmoid flexure does not indicate that the ovum was primarily fixed to the peritonæum, or that a tubal pregnancy ruptured into the abdominal cavity; it reached the colon, as it reaches other viscera, by slowly stripping the peritonæum off the bowel and fixing its villi into the muscular tissue of the gut; or it may have become adherent by pressure, just as any other abdominal tumor. It may be possible for a tubal gestation sac that has ruptured into the peritonæum to continue to develop, and for the placenta to gradually attach itself

through its villi to the abdominal or visceral surface, but I doubt if we have any positive evidence that this has occurred. There seems to be evidence, however, that the foetus in the latter months of pregnancy has ruptured through the folds of the broad ligament into the cavity of the abdomen and continued to develop; but the placenta did not follow it.

The divisions and subdivisions of ectopic pregnancy, as found in most standard text-books, tend to confuse the medical mind, for such classifications are not sustained by facts correctly observed. Thomas, in speaking of the difficulty of determining how to classify cases of ectopic pregnancy, says: "Nothing is more delusive than post-mortem examination when practiced by one unequal to the task which he undertakes."

As the treatment of ectopic pregnancy at different stages of foetal development varies according to the conditions we are to contend with, it is well to adopt something after the following arrangement:

1. Treatment before primary rupture of the tube.
2. Treatment after rupture into the folds of the broad ligament and before the period of foetal viability.
3. Treatment where the sac ruptures into the peritoneal cavity.
4. Treatment after foetal viability and at full period of gestation.
5. Treatment after death of the foetus at or before the full period of gestation.

Rupture of the gestation sac nearly always occurs before the end of the third month, and it is doubtful if a diagnosis of ectopic pregnancy can be positively made before that time. Of course, subsequent results may demonstrate the correctness of a diagnosis before the end of the third month, but the symptoms upon which the diagnosis is made are not different from what may be caused by other diseased conditions.

The following from Thomas indicates that he entertains doubts about being able to positively diagnose ectopic pregnancy in the early months: "After all is said in regard to the diagnosis of ectopic gestation, it must be added that a positive conclusion is very generally difficult and often impossible." A correct diagnosis can hardly be made unless the membranes expelled from the uterus are shown to be decidual in a careful examination by an experienced microscopist. With this exception neither the subjective nor the objective symptoms are pathognomonic; the same rational and physical signs may be observed in other cysts, tumors, or deposits in the pelvis. I believe that in some of the reported successful cases following the use of electricity the women were suffering with other forms of pelvic trouble. Lawson Tait has operated for ectopic pregnancy nearly fifty times, but he has never diagnosed a case

TREATMENT OF ECTOPIC PREGNANCY.

until after rupture of the sac. So, if this difficulty in diagnosis is usual with experienced gynaecologists, it is not probable that the average general practitioner could often make a correct diagnosis. A rapid decrease in the size of other pelvic tumors or deposits, and a decided improvement in the local and general condition, may be caused by a healthful stimulation by the faradic current, or the electrolytic effect of the galvanic current.

But, assuming that a diagnosis has been made, what plan of treatment should we adopt? There are two recognized methods: To remove the gestation sac by laparotomy, or to destroy the life of the foetus and leave it and the membranes in the cavity to be absorbed, to become encysted, or to suppurate and discharge through some of the viscera or through the abdominal walls. Electricity is the only foeticidal means now recognized as orthodox. The especial advocates of this in our country are Thomas, Mundé, Lusk, Garrigues, York and Mann, though it has been tried by others here and abroad, and successful results are reported.

Thomas says: "A diagnosis of ectopic pregnancy being arrived at, destroy foetal life as promptly as possible." Also: "Unless the imminence of rupture renders foeticidal efforts hazardous and delay for this purpose unadvisable, the life of the foetus should always be destroyed prior to foetal viability, before laparotomy is resorted to."

I enter a protest against such treatment, and, waiving the moral aspect of the question, insist upon substituting laparotomy and the entire removal of the gestation sac, because it will give much better immediate and subsequent results.

Dr. Harbert, in 1849, Kiwisch, in 1857, and Stephen Rodgers, in 1867, suggested and advocated laparotomy in ectopic pregnancy with rupture, but I find no record of any one recommending the operation before rupture in the early months until I suggested its propriety before Tait did his first section for tubal pregnancy with rupture. Before primary rupture of the sac the adhesions are very few, and the removal of the foetus and membranes by laparotomy is so simple and devoid of danger in the practice of an experienced operator that the mortality would be reduced to a minimum; it would be less than the mortality following the use of electricity. Thomas reports twelve cases treated by electricity without a death. If he was correct in his diagnosis he could have got as good immediate results by laparotomy, and the subsequent condition would have been much better. I believe it is possible to reduce the mortality in such cases by laparotomy to one per cent. in the practice of experienced and successful abdominal surgeons. It may be contended that these patients can not always be operated on by experienced men; nor can electricity be always used by men who are familiar with its successful use in such cases. If it is necessary to refer the woman to some specialist in laparotomy, it will as often be necessary to refer her to some specialist in electricity, who has all the electrical appliances necessary for good results in such work. The services of a man experienced in abdominal surgery may be obtained as easily as the services of a man experienced in the use of electricity. If the woman recovers from the immediate effects of laparotomy she is permanently cured, and, the deceased tube being removed, she can not have a recurrence of pregnancy or disease on that side. Electricity may cause rupture of the tube, or the sac may rupture after death of the ovum, the result of contractions of the muscles of the tube in an effort to get rid of what is then a foreign body, just as in intrauterine pregnancy. Rupture at three or four weeks would be as fatal as at three months; and unless the ovum is removed, it may cause serious or fatal com-

plications; and until removed, the woman's life is at the mercy of accidents over which we have no control.

Cases are reported where these women continued to suffer so intensely after electrical foeticide that it finally became necessary to remove the diseased structures by laparotomy. The placenta may continue to grow after the death of the embryo or foetus, and when finally separated may cause death by secondary intraperitoneal haemorrhage, by septic infection or by the formation of pelvic abscess. If the operation is not done until these women have fallen into a state of chronic invalidism, it will be complicated by the formation of adhesions, and the results will not be good. Dr. Joseph Price removed an ectopic gestation sac on September 11, 1887, before rupture or partial rupture of the tube and before the fourth month, but he was not positive in his diagnosis until he had removed the cyst. I can find no other case of the kind recorded.

The advocates of electricity have not generally recommended its use after the fourth month, but it has occasionally been used in advanced pregnancy as a preparation for laparotomy, believing it would also kill the placenta and lessen the dangers from haemorrhage in a subsequent abdominal section. In such cases the use of electricity would necessarily be dangerous, for the foetus and placenta could not be killed unless the electricity is conveyed by acupuncture into the sac. If ectopic pregnancy continues beyond four months and a half, the sac will generally not rupture and will go to full term, so that a laparotomy may be done in the interest of both mother and child.

Again, if the pregnancy continues in the folds of the broad ligament to four and a half or five months, the physician will frequently have no opportunity to use electricity until term—possibly not until after term—for these women will not always consult the doctor until they are suffering labor-pains, or until they cease to feel motions of the child, and think they have gone beyond their time. After rupture into the folds of the broad ligaments the treatment should usually be expectant until foetal viability, and laparotomy should not be done unless rupture appears imminent from over-distension, contractions, or the life of the woman is in jeopardy. The life of the child should be an important element where it is possible to save it without greatly increasing the dangers to the mother, and, as the prognosis is not materially greater in a laparotomy at the eighth or ninth month than at the sixth month, the child should not usually be removed until it is viable. If the woman is even under our immediate observation after the primary rupture into the folds of the broad ligament, an ectopic pregnancy can not always be distinguished from an extraperitoneal haematocele until advanced to four and a half or five months, when the foetal movements are felt, or the foetal heart sounds are heard; and in an extraperitoneal haematocele the treatment should be expectant. In only the minority of the one in four cases of ectopic pregnancy with rupture into the folds of the broad ligaments do the patients go to term; in the majority the foetus perishes and is absorbed with the haematocele, and may cause pelvic abscess, or remain quiescent as a lithopædion. But if the tube ruptures into the peritonæum, unless abdominal section is done, death is the alternative.

Tait has seen over one hundred cases, and the patients all died except those upon whom he operated; and Goupil has seen none recover. The experience of these men accords with the experience of all men who have correctly observed the results of intraperitoneal rupture. The symptoms are so distinctive that a diagnosis is easily made; it could only be confounded with intraperitoneal haemorrhage from other

causes; but the indications for treatment in each instance would be the same—open the abdomen and arrest haemorrhage. Intraperitoneal rupture does not generally cause death suddenly; in the majority of recorded cases it did not occur until from four to twelve hours after rupture, thus giving sufficient time to open the abdomen.

Tait says: "In very many of these cases a feature of great interest is the fact that the first attack of haemorrhage is generally not fatal, and that the records yield uncontested evidence that it may require the repeated occurrence of bleeding to bring about the fatal issue."^{**} Having diagnosed intraperitoneal rupture of the tube, or of the folds of the broad ligament, there is now no difference of opinion as to the indications for treatment. Open the abdomen at once, unless shock is so great that the operation would cause immediate death; in this condition resuscitate the woman before operating.

The mortality in all cases operated upon is 4.70 per cent., while the mortality of cases treated by expectancy is practically 100 per cent. Tait reports forty-two operations, with but two deaths. His first operation resulted fatally because he did not then know how to treat the cyst, and in another case he operated on a woman in such profound shock that she was unable to rally.

The indications for the operation are:

1. To control haemorrhage.
2. To extirpate the sac and other injured structures.
3. To cleanse the abdominal cavity aseptically and prevent septic infection.

Peritonitis should not be a frequent complication, for in post-mortem examinations in tubal rupture the peritoneum has generally been found healthy.

In laparotomy "all the possibilities are under the control of human intelligence" and "nothing is left to chance;" "it enriches our resources in cases of impending danger," and by it we can diagnosticate ectopic pregnancy where no foetus can be found. The foetus was absent in most of Tait's cases, but he found a placenta or foetal membranes in all of them.

Where the foetus is developed to four and a half months in the folds of the broad ligament, laparotomy should not be done until after the eighth month, unless rupture of the sac is imminent, or the woman's life in danger, or the foetus dead; for this delay does not materially add to the dangers of the operation, and is greatly in the interest of the child. Nor should we delay the operation until the beginning of the false labor, for the prognosis would then be much less favorable for mother and child; the discouraging mortality in the primary operation, as shown by the statistics of Kiwisch, Henning, Hart and Barbour, is largely due to this delay, as the children were often dead, or too feeble to live, before they were removed, and in many of the cases the mothers were in *extremis*; the operations were also crudely done, and hardly any two were by one man. Recent statistics indicate such encouraging results in the primary operation that there are now but few operators of recognized ability who recommend the secondary operation. In most of the successful secondary operations the women had fortunately escaped

the usual complications that cause death, and firm adhesions had shut off the peritoneal cavity, so that the operation was comparatively simple, being little more difficult than opening a large pelvic abscess that had become adherent to the abdominal walls; but in one-third of the cases where the primary operation is not done the patients die without any operation. The haemorrhage is generally much less in the secondary operation, because the death of the foetus is usually followed by diminished placental vascularity, gradual atrophy and shrinkage; but this is not always true, and death from haemorrhage in placental separation has occurred in the practice of experienced operators many weeks after the death of the child. If the operation is done before the end of the fifth month for rupture into the abdominal cavity, or for other reasons, before primary or secondary rupture, the incision should be made in the mesial line between the umbilicus and the pubes, and the foetus and the membranes removed. Haemorrhage is not necessarily an ugly factor here, for, if the membranes are rapidly and carefully separated down to the broad ligament, both ends of the vessels supplying the sac can be ligated and dangerous bleeding controlled. It is necessary to ligate the broad ligament *en masse*, so as to include the vessels as they enter and leave the placenta, for, if we ligate only the proximal end of the ovarian artery there may be fatal haemorrhage from its uterine end, because of its intimate anastomoses with the vessels entering the uterus between the folds of the other broad ligament. In other particulars the operation is similar to an ordinary abdominal section.

If the operation is not done until after the child is viable, it is best to avoid the peritoneal cavity by entering the gestation sac where it is adherent to the anterior abdominal walls, two or three inches from the linea alba. This is especially the correct treatment if we do not intend to remove the placenta, for, if the peritoneal cavity is opened, the membranes should be removed, if it is possible to do so without causing fatal haemorrhage. It has not been decided by experienced operators just what is the best way to treat the placenta. Martin, Tait, etc., have removed it successfully, but our means to control haemorrhage at this stage of pregnancy are so unreliable that there is always great danger of death from loss of blood.

Again, if the placenta is left *in situ*, to slough and come away through an opening in the incision, the process is long, tedious and exhausting, and very often causes the death of the woman.

Tait has recently recommended cutting the cord short and leaving the placenta in the sac to be hermetically sealed in an aseptic condition, after a fashion that he described. This is an excellent way to treat the placenta if it will prevent suppuration, so that all the membranes may finally be absorbed; but experience will have to decide the value of this method of treatment. The removal of the membranes would be the ideal operation if we had positive and reliable means to control haemorrhage, and may be some one will discover how this can be safely done. In the meantime, the method of treating the membranes must be selected by the operator to meet the indications in any particular case. The vessels may be ligated *en masse*, separate bleeding points ligated, or haemorrhage controlled by styptics, such as iron, vinegar, or actual or galvanic cautery.

In conclusion, I will report a successful abdominal section for an ectopic pregnancy at three months and a half:

On November 17, 1889, I was called by Dr. H. K. Pusey to see Mrs. T., from south-western Kentucky. She was thirty-two years old, was married twelve years, and had not been pregnant. After a careful examination, we diagnosed

* In June, 1890, I was requested by Dr. Kelch to do a laparotomy for ruptured tubal pregnancy. The woman died in a few minutes after we entered her room. The rupture occurred about thirty hours before I saw her, and though the shock was profound she soon rallied and was in a fair condition for an operation until secondary haemorrhage just before death. Her life could easily have been saved had she obeyed Dr. Kelch, who urged her to submit to a laparotomy a few hours after the rupture occurred. Delay was fatal as it will always be.

cated ectopic pregnancy at about three months and a half; Dr. W. O. Roberts also examined the woman, and concurred in our diagnosis. There had been no symptoms that positively indicated primary rupture of the tube, but the woman was suffering so much from mechanical pressure on the pel-

seuent to the operation. On the fourth day and for a week afterward she had an exhausting diarrhoea and passed several large, round worms. After the diarrhoea had been controlled she began to complain of severe pressure upon the rectum and bladder, and, in an examination, a large

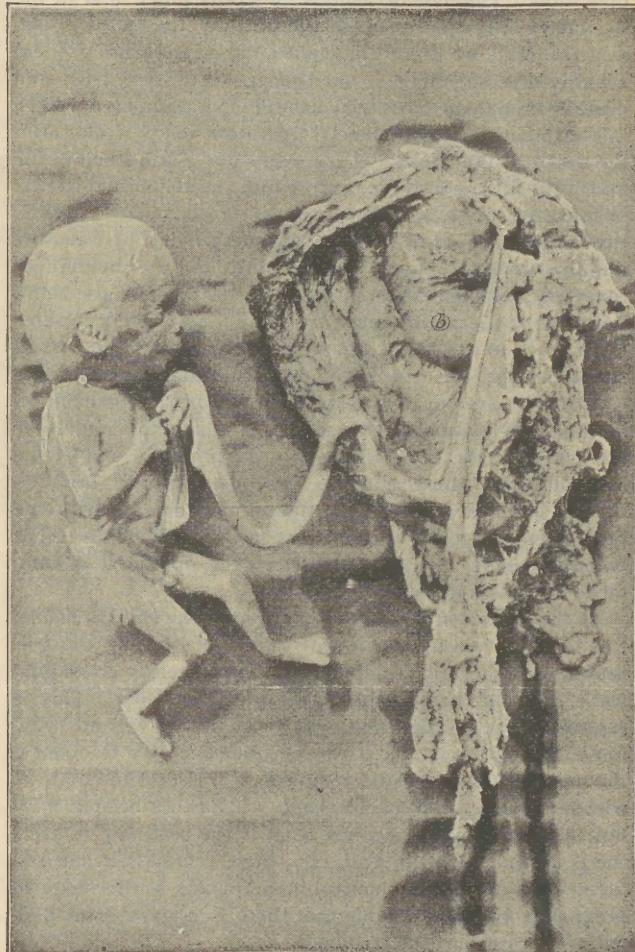


FIG. 1.—*a*, fimbriated end of tube ; *b*, ovary ; *c*, Fallopian tube.

vic organs and from sharp cutting pains in the region of the tumor that we thought it unwise to allow the pregnancy to continue. *An abdominal section was done on November 19th. The uterus was five inches and a half deep, was very large, and was adherent to the abdominal walls on the left side nearly up to the umbilicus, and three inches of a small intestine were firmly bound to the walls between the uterus and the mesial line. The pregnancy was in the folds of the right broad ligament, and the sac was adherent to the uterus, the pouch of Douglas and the right lateral walls of the pelvis. The adhesions of the uterus and sac were quickly separated and the fetus and placenta pulled out through the incision, with no attachment left except to the broad ligament. A double ligature was applied and the membranes cut away. Bleeding did not amount to more than a few ounces, and the woman was put in bed with a pulse of 80 and with no shock. A drainage-tube was used for nearly a week, and at no time was there an untoward symptom con-

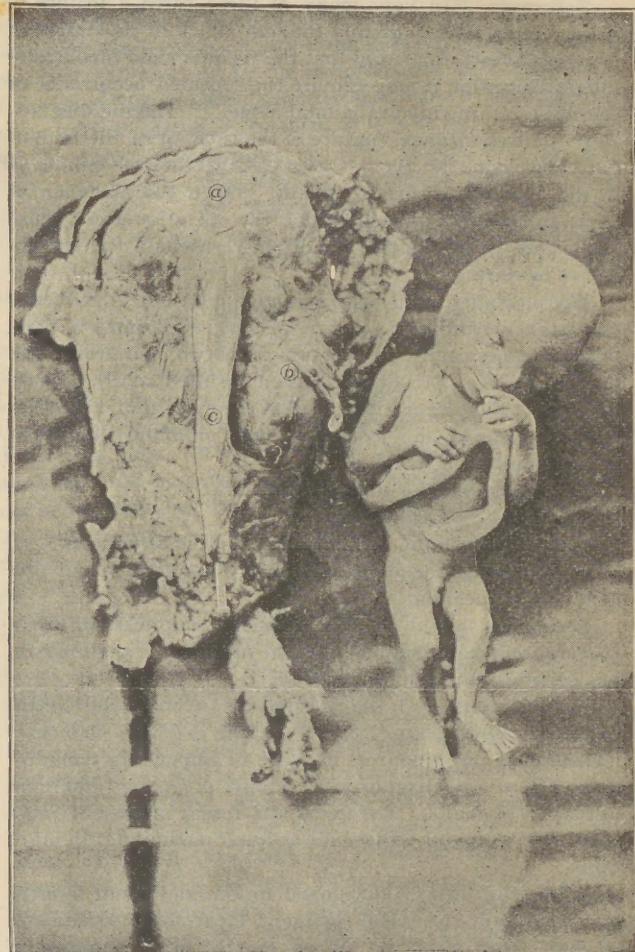


FIG. 2.—*a*, fimbriated end of tube ; *b*, ovary ; *c*, Fallopian tube.

haematocele was found in the left broad ligament pressing low down into the pouch of Douglas. This finally suppurrated and discharged into the rectum, and the patient is now convalescent. I was assisted in the operation by Dr. H. K. Pusey, Dr. A. M. Cartledge and Dr. Henry Orendorf. The accompanying woodcuts were made from correct photographs of the specimen. This is my second operation within six months for ectopic pregnancy, and in both cases the conception was in the right tube, and the uterus was pushed to the left side and extended nearly up to the umbilicus ; and I wish to emphasize the fact that it was about as large as in an intrauterine pregnancy at a corresponding period, and, in general appearance, identical.

In a careful examination of the specimen, I find conclusive proof that conception began in the outer third of the tube, but that the sac ruptured into the folds of the broad ligament where the ovum continued to develop.

*To enable me to continue my laparotomy work under the most favorable conditions, I have reserved rooms in which to do these operations only, where the surroundings will be such as to minimize the dangers from septic infection and to offer additional facilities for doing successful surgery. While much of the bad abdominal and pelvic surgery is the result of ignorance and inexperience, I am constrained to believe that many deaths after these operations are consequent to the difficulty, and sometimes the impossibility, of continued surgical cleanliness in private houses, or in apartments where other surgical operations are regularly done by several surgeons.]

